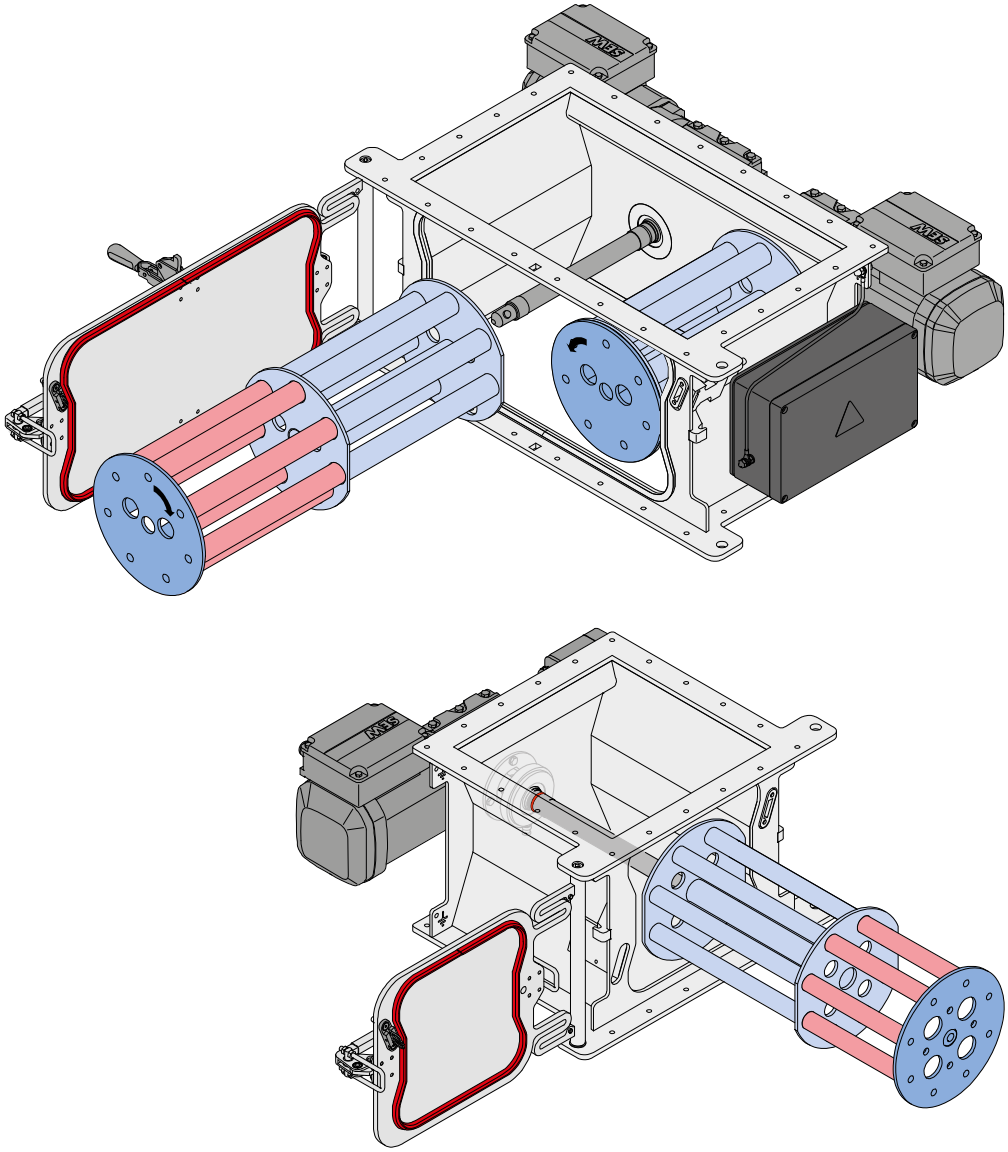
Installation and maintenance manual

Rotary Cleanflow magnetic separator, SECR series

Magnetic separator with permanent magnet



The descriptions and pictures in this manual, used for explanation, may differ from the descriptions and pictures of your version.
The as-built drawing(s) of the delivered device are attached.

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Disclaimer

Version overview

Version	Date	Description
1.0	06/2023	Manual in line with CTO updated.
1.1	12/2023	Application of air flushing adjusted.

Foreword

This manual contains information for the correct installation and maintenance of the device. The manual contains instructions to prevent possible injury and serious damage and ensure safe and trouble-free operation of the device. Please read this manual thoroughly and make sure you have understood everything before installing the device in your installation and putting it into operation.

The data published in this manual are based on the information available at the time of delivery. We reserve the right to change or modify the construction and/or model of our products at any time, without any obligation to modify previously delivered products accordingly.

The manual can be ordered in addition, specifying the device description and/or item number as well as the order number.

In the manual, the SECR rotary Cleanflow magnetic separator is further referred to as "device".

- This manual and the manufacturer's statement(s) should be regarded as part of the device.
- The documentation set should remain with the device if it is sold.
- The manual must be available to all operating personnel, service technicians, and others working on the appliance during its lifetime.

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Safety

This chapter describes the safety hazards of the device. Where necessary, warning pictograms have been applied to the device.

Know your pictograms

- Carefully read the warnings and instructions on the stickers and labels of the device.
- Check regularly that the stickers on the device are present and clearly legible.
- Keep the stickers clean.
- Replace deleted or unreadable stickers for new ones and place them in the same place.

General safety instructions

- The instructions in this manual must be adhered to. Failure to adhere to them may result in property damage, personal injury or even danger to life.
- The device may only be used for magnetic filtration of dry and greasy powders in free-fall conveying lines. Any other use does not comply with the regulations. Any resulting damage is not covered by the manufacturer's warranty.
- The device is equipped with safety and shielding devices. Make sure all personnel working with or in the direct vicinity of the device are wearing sufficient safety equipment. Always leave all safely and shielding devices at their original location when it is not necessary to remove them.
- Take extra safety precautions when the device is still easily accessible for personnel. If this is not possible, make sure clear instructions are given about the installation if which the device is a part.
- The device may only be used remotely when all shields are installed and moving parts are not accessible.
- All work on the device must only be done by qualified personnel. Maintenance work should preferably be done by Goudsmit Magnetic Systems personnel.
- Always apply local safely and environmental regulations.

Dust explosion hazard - Ex marking

If the device is made according to an Ex dust category (1D/2D/3D, according to ATEX device Directive 2014/34/EU) and thus can be used in an Ex dust zone (20/21/22, according to ATEX workplace Directive 99/92/EC), then the Ex category is indicated on the type plate.

- Check that the device meets the appropriate Ex category.
- Check that the mounted components (such as motor gearbox, safety switch, proximity sensor) with their own nameplate comply with the correct Ex- category for the Ex- zone in which the device will be used.

Damage caused by magnetic field

The magnets generate a powerful magnetic field that attracts ferromagnetic parts. This also applies to ferromagnetic material that one carries around, such as house keys, money and tools. Within the magnetic range, only use non-ferromagnetic tools and workbenches with a wooden worktop and non-ferromagnetic base.

Strong magnetic field

Injury may occur during work and measurement checks on the magnetic components of the magnetic bars. Take care that fingers do not get caught between the magnetic components.

Standards and guidelines

CE marking

In terms of construction and operation, this device complies with European and national requirements.

CE The CE mark confirms the compliance of the device with all applicable EU regulations associated with the affixing of this mark.

Directives

The standard version of this device complies with the requirements of the following European Directives:

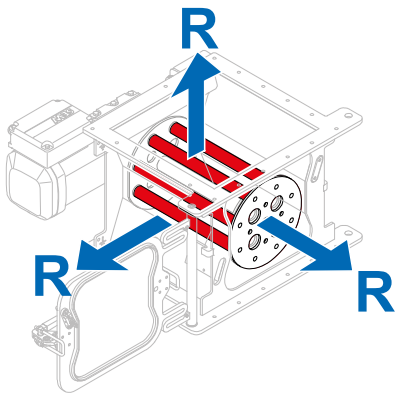
- Machinery Directive 2006/42/EC;
- EMC directive 2014/30/EU;
- ATEX Directive 2014/34/EU (if applicable).

Occupational and public exposure limits for (electro-) magnetic fields

The limit values of magnetic fields are defined according to the EMF Directive 2013/35/EU as follows:

Directive 2013/35/EU of the European Parliament and of the Council of 26 June 2013 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from electromagnetic fields.

Observe the following measures regarding exposure to magnetic fields according to EN12198-1 (machine category = 0, no restrictions) of the device:



Danger to life for persons with implanted medical devices

Persons with active implanted medical devices (e.g. pacemaker, defibrillator, insulin pump) must not go within a radius "R" of **250 mm** from the device.

Damage to magnetically sensitive products

Products containing ferromagnetic parts such as bank cards, credit and chip cards, keys and watches may be irreparably damaged if they come within a radius "R" of **80 mm** from the device.

Pregnant personnel should maintain a minimum distance of **25 mm** from the magnetic bars.

Occupational exposure limits (general and limb) were not exceeded.

ATEX (if applicable)

If the device is suitable for use in potentially explosive atmospheres (ATEX), an Ex marking will be placed on the type plate specifying the environment for which the device is suitable, the specific device category and other criteria the device meets.

Example Ex marking Dust:  II 1/2D c T140°C

Explanation:

II ➔ Explosion group (I is underground mining, II is other)

1/2 ➔ Equipment category (ignition protection level: 1= very high, 2= high, 3= normal)

D ➔ Type of ATEX environment D(ust)

Equipment category	1D	2D	3D
Suitable for ATEX zone(s)	20 (21 & 22)	21 (22)	22

[1D = inside device / 2D = outside device]

c ➔ Type of Ex-protection:

c = structural safety

t = protection by an enclosure

h = non-electrical equipment (protection method not specified further)

T140°C ➔ Maximum surface temperature for dust atmosphere

If the device is externally certified, the ATEX certificate number is added to the type plate. Next to the CE mark is the identification number of the Notified Body that certified our ATEX quality assurance system.

The final ATEX classification of the assembled device may be lower than the ATEX marking on the Goudsmit type plate due to the assembled parts having their own ATEX marking.

If the device does not contain 'own ignition sources', and therefore does not fall within the scope of the ATEX directive, the device will not be Ex-marked and will come with a **Declaration of Exclusion**, stating this and also listing the Ex-zones in which it can be safely used.

ATEX options description

SECR - B - 3030 - 08E - HT - Ex - F5M - B - B - M1

The EX item in the product key denotes the following ATEX options:

Value	Ex marking	
NA	No ATEX version	
EX		II 1/2D c T140°C
X4		II 1/3D

ATEX measures

- The temperature of the product should not exceed 80°C.
- For ATEX dust environment:
- The ignition temperature of the dust must exceed 157°C.
- The smouldering temperature of a dust layer should exceed 180°C.
- Dust layers thicker than 5 mm should not accumulate on the device.
- Ensure that no particles > 10 mm are present in the product stream. These may damage the magnet or extractor tubes or cause sparks.
- If necessary, install a mechanical filter (sieve) for the separation system.
- The free fall height above the device should not exceed 10 metres.
- For the ATEX-certified magnetic device, additional purchase parts must be certified according to the ATEX directive. This includes control units, terminal box(es), switch(s), sensor(s) and pneumatic components, etc. Make sure these are fitted by qualified personnel!
- If the appliance is placed in storage or left idle for longer periods, make sure it is emptied and cleaned.
- The device must be grounded. The electrical resistance to ground should be less than 1 MΩ. If a gasket is used between the device and the larger installation, provide a means of equalising potential electrostatic charges with a maximum electrical resistance for the installation of 25 Ω. This can be done by applying a braided bonding cable or other means.
- No paint or coatings should be applied to the inner surface of the product chute.
- No insulating paints or coatings with a thickness of more than 2 mm shall be applied to the outside of the equipment.
- All screw connections inside the device must be secured against loosening.
- Prevent ignition sources such as glowing particles, flames or hot gases from entering the device. If explosive gases, vapours or mists are present in the device, prevent the entry of electrically charged bulk materials. Substances susceptible to accumulating an electrical charge can be an ignition source for gases, mists and vapours (e.g. chargeable plastic granules with solvent vapours).

ATEX procurement parts have their own ATEX marking.

General information

Ferromagnetism

The principle operation of the device is based on ferromagnetism. Ferromagnetism is the property possessed by certain materials, such as iron, cobalt and nickel. These materials can become magnetised when exposed to an externally applied magnetic field. Materials that remain magnetised after the external magnetic field is removed are called permanent magnets. These materials are called permanent magnets or hard magnetic.
However, most magnetic materials lose their magnetism after the external magnetic field is removed.
These materials are called "soft magnetic". Most alloys of iron, cobalt and nickel are magnetic.
However, some stainless steel alloys such as AISI304 or AISI316 are only slightly magnetic.

Sales and warranty conditions

The conditions of sale are the **'General conditions for the supply and assembly of mechanical, electrical and electronic products' (SE01)**, published by Orgalime in Brussels.
You can request these conditions in writing from Goudsmit Magnetic Systems B.V., as stated in our written offer.
The above document also contains the warranty conditions.
The warranty on the device is void if:

- service and maintenance are not performed in accordance with the operating instructions or are performed by personnel not specially trained for this purpose. Goudsmit Magnetic Systems recommends that service and maintenance be performed by Goudsmit Magnetic Systems service technicians.
- modifications are made to the device without our prior written consent.
- parts of the device are replaced with non-OEM or non-identical parts.
- lubrication products other than those prescribed for this device are used.
- parts of the appliance are damaged because the appliance was put into production with a (permanent) malfunction.

All parts subject to wear and tear are excluded from warranty.

Other comments/warnings

- Do not use the device if it is damaged.
- Use the device only for the application for which it is designed.
- Check that all protective shields (including all safety circuits) are correctly mounted and installed.
- Ensure that the device is maintained correctly and in accordance with the instructions in this manual.

Remedy any malfunction before putting the device into operation. If the device is put into operation with the malfunction, after you have carried out a risk assessment, warn the operating and maintenance personnel of this malfunction and the possible risks that may result.

Scope of delivery

Check the shipment immediately on delivery for:

- possible damage and/or deficiencies due to transport. If damaged, ask the carrier for a transport damage report.
- completeness of delivery. Check that the ordered accessories are included.

In case of damage or wrong delivery, contact Goudsmit Magnetic Systems immediately.

Specifications

Function description

The device is suitable for magnetic filtration of small amounts of ferrous contaminants from poorly flowing - e.g. fatty - powders in free-fall transport pipes. Rotation of the magnetic bars prevents bridging and blockages. The product must not contain any ferromagnetic parts large or heavy enough to cause damage to the magnetic bars.

- ► Preferably place a sieve before the product inlet of the device in your installation.

Scope

The device can be used for powder and granular products (grain size from 30 µm to 10 mm) such as flour, sugar, coffee beans, plastics, ceramics, etc. If even smaller or weakly magnetic stainless steel particles need to be filtered out, the device can be equipped with even more powerful Neoflux® magnets.

Use in food streams

The device can be adapted for almost any product flow. The standard version already has few slits and mainly stainless steel materials in the product channel. The product channel (or even the complete housing with magnetic bars) can be supplied in crevice-free AISI304 or AISI316, in combination with other - e.g. customer-prescribed or supplied - food-grade materials. Surface treatments such as electro polishing, pickling, etc. are of course also possible.

The device is NOT suitable for use in sticky or damp product flows and environments.

Capacity

The device is intended for use in product flows with a maximum capacity of 9 to 45 m³/hour, depending on the size and number of magnetic bars in the device.

Sound pressure level

The sound pressure level of the device is below 70 dB(A). If the level increases, the device should be checked immediately for possible defects.

Air pressure within the product channel

The (relative) overpressure in the product channel must be below 0.2 bar. The (relative) negative pressure in the product channel must not exceed 0.5 bar.

Magnet quality

The device is equipped with magnetic grade GSN-42, GSN-42SH or GSN-52. The table below shows the field strengths (magnetic flux density values).

Magnetic quality applied (at 20°C and T_{max} 80°C)	Magnetic bar / extractor tube size [mm]	Field strength (flux density) measured on magnetic bar (±10%)	Field strength (flux density) measured on extractor tube (±10%)
GSN-42 (Br 13,300 gauss)	Ø23 / Ø25	10,700 gauss	8,000 gauss
GSN-42SH (Br 13,700 gauss)	Ø30 / Ø32	13,000 gauss	10,500 gauss
GSN-52 (Br 14,800 gauss)	Ø23 / Ø25	12,000 gauss	8,800 gauss

Temperatures

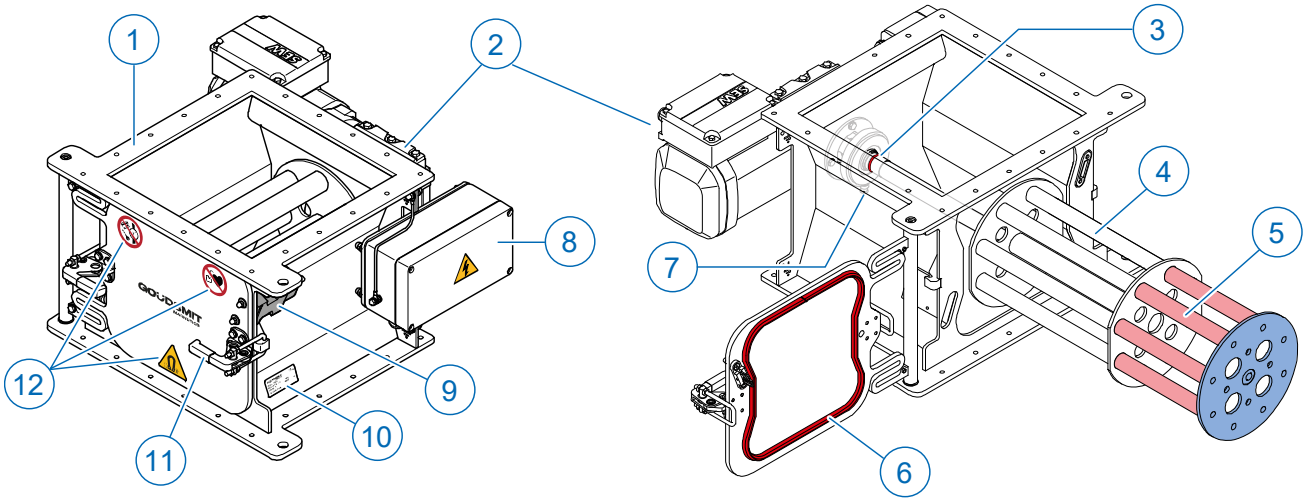
Using standard Neodymium (NdFeB) magnets, the device is suitable for the following ambient and product temperatures:

Magnetic quality applied	Max. ambient temp.	Max. ambient temperature (ATEX)	Max. product temp.	Max. product temp. (ATEX)
GSN-42 / 52	60 °C	40 °C	60°C	60°C
GSN-42SH	60 °C	40 °C	80°C	60°C

The device must be protected from higher than prescribed temperatures, as the magnets permanently lose magnetic strength when exposed to high temperatures.

Product information

Standard construction



1.	Flange	5.	Magnet rotor	9.	Door switch
2.	Gearmotor	6.	Door seal	10.	Type plate
3.	O-ring	7.	Air connection or lock nut	11.	Quick release clamp
4.	Extractor	8.	Control box	12.	Warning pictograms

- The actual magnet unit is the rotor, consisting of an extractor and a number of high-strength Neoflux® magnetic bars.
- The magnetic bars are welded onto 1 flange and together form the magnet part of the rotor [5], which fits exactly into the extractor.
- The extractor [4] consists of 2 flanges with tubes welded or brazed between them.
- The magnet unit slides on a shaft driven by a gearmotor [2].
- The gearmotor [2] is a flange motor and is mounted directly on the stainless steel housing.
- The housing has an inlet and outlet flange [1] with holes for bolting.
- In some types, the shaft between motor and magnet rotor is additionally extended with an intermediate bushing to easily detect motor oil loss through the shaft and further reduce the danger of motor oil entering the housing.
- The door is dust-, dirt- and watertight with a silicone gasket/seal [6] and is locked by 2 quick-release clamps [11].
- The door switch [9] is connected to the control box [8] as standard. If the door is opened while the motor is running, the motor is immediately switched off and the magnet unit stops rotating.
- The magnet unit can be inspected and cleaned as soon as the door is opened.

Notes on the magnet unit

The magnet unit has fragile extractor tubes. Due to the low wall thickness of the tubes, excellent ferrous separation rates are achieved. However, larger, heavier ferrous and other particles in the product flow can cause dents in the fragile extractor tubes.

Make sure there are no heavy parts in your product flow that could damage the extractor tubes.

► For prevention, install a mechanical sieve in front of the device.

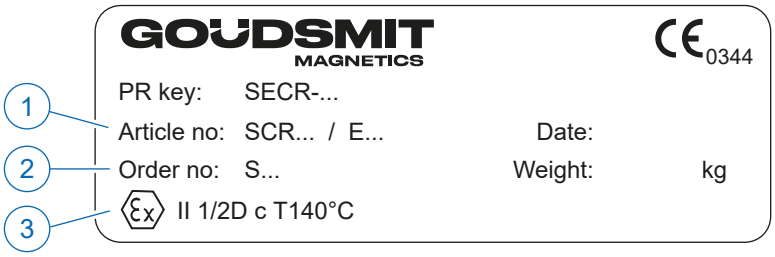
Also during a cleaning cycle, if the magnet unit is handled carelessly, dents may occur in the extractor tubes. Once there are dents in the extractor tubes, the magnetic bars of the magnet rotor may be difficult to remove from the extractor.
If the magnetic bars remain stuck in the extractor tubes, this problem should be corrected as soon as possible or you should install a new magnet unit to prevent further damage.

Damage to extractor tubes or damage caused by damaged extractor tubes are not covered by the warranty.

Type plate

On the device is the type plate with identification data as shown below. The identification data is important for maintenance of the d.

► Always keep identification data clean and legible.



1. Article number
2. Order number
3. ATEX marking (if applicable)

Always provide the article [1] and order number [2] when ordering spare parts, service or in case of a malfunction.

Door switch

The door switch acts as a safety switch and can be supplied in 2 versions:

1. As soon as the door is opened in operation, the motor immediately stops running (standard).
2. The door is electrically locked and can only be unlocked by a signal from the control system.

Transport and installation

Transport

- ▶ During transport, ensure that the area around the installation where the device is placed is free.
- ▶ Avoid any impact during transport to avoid damage, especially to the magnetic bars.
  If the tubes are damaged, the magnet packages cannot move in the tubes or move badly.

Installation

Electrical voltage hazard

When installing and electrically connecting the device, have all work carried out by electricians or qualified personnel trained for this type of task.
Always ensure that the electrical voltage is switched off when carrying out work on the device's electrical system, as parts of it may be live.

Take the following precautions:

- Only allow qualified personnel to work on the installation.
- The product channels must be strong enough to support the weight of the device and the raw product inside.
- Make sure there is at least 1 metre of free space around the installation to accommodate the device.
- Magnetic force is permanently present on the magnet unit. See chapter "Safety" for the precautions to be taken when working on the device.

Only use lifting and handling equipment that is in good condition and comply with the permissible load capacity of the implement. The weight of the device is indicated on the type plate.

Keep in mind the location of the centre of gravity. This is because it is NOT in the centre of the device, but on the motor side.

- ▶ The device comes in a wooden crate. Open the crate and mount 4 lifting eyes on the top flange.
  Attach chains or hoisting belts to the lifting eyes.
- ▶ Lift the device out of the crate.
  Entrapment risk: Do not get your hands inside the crate while lifting.
- ▶ Check at the quick release clamps that the door is properly closed. During transport, the door may open, allowing the magnet unit to fall out.
- ▶ Work safely, provide sufficient working space and use company-safe scaffolding, ladders and other tools so that the device can be installed without risk.
- ▶ Bolt the flanges of the device firmly and leak-proof into the product channel.
- ▶ Preferably mount the unit at a working height of about 1.5 metres, so that the operator can easily remove the magnet unit for cleaning and maintenance work.
- ▶ To prevent physical damage and wear, the cabling on the outside of the device must be adequately protected.

Vibrations

The construction of the channel in which the device is fixed must not cause vibrations that could damage or wear out the device, as the magnetic material may suffer permanent loss of magnetic force when exposed to high vibrations.

The only vibrations in the device are caused by the moving and rotating magnetic bars.

The product channel in which the device is fixed must be thick enough to absorb / attenuate the (relatively low) forces of the moving and rotating bars.

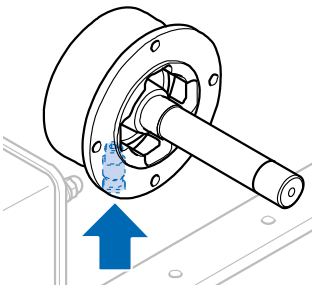
Free space

The free space available around the device must be ample for inspection and maintenance work, such as dismantling and/or assembling the magnet unit. Among other things, this means that at least 1.5 times the bar length must be kept free at one end.

Preventing electrostatic discharges

To prevent electrostatic discharge, provision must be made to prevent potential differences between the installation and the device. This can be done by installing a connecting cable to the installation. The electrical resistance must be lower than 25 Ω.

Air pressure between the oil seals on the motor shaft and the housing



There is an air connection between the geared motor and the device housing to create excess pressure. Air flushing prevents product material from leaking out. On the other hand, it prevents dirt from outside the product channel entering the product channel. If an air pressure connection is connected to the motor mounting flange, the air connection pressure must not exceed 0.05 bar.

This air pressure may only be connected if an air coupling is fitted. If a lock nut is fitted, the device is NOT suitable for applying excess pressure.

The air seal works optimally when the pressure inside and outside the product channel is equal.

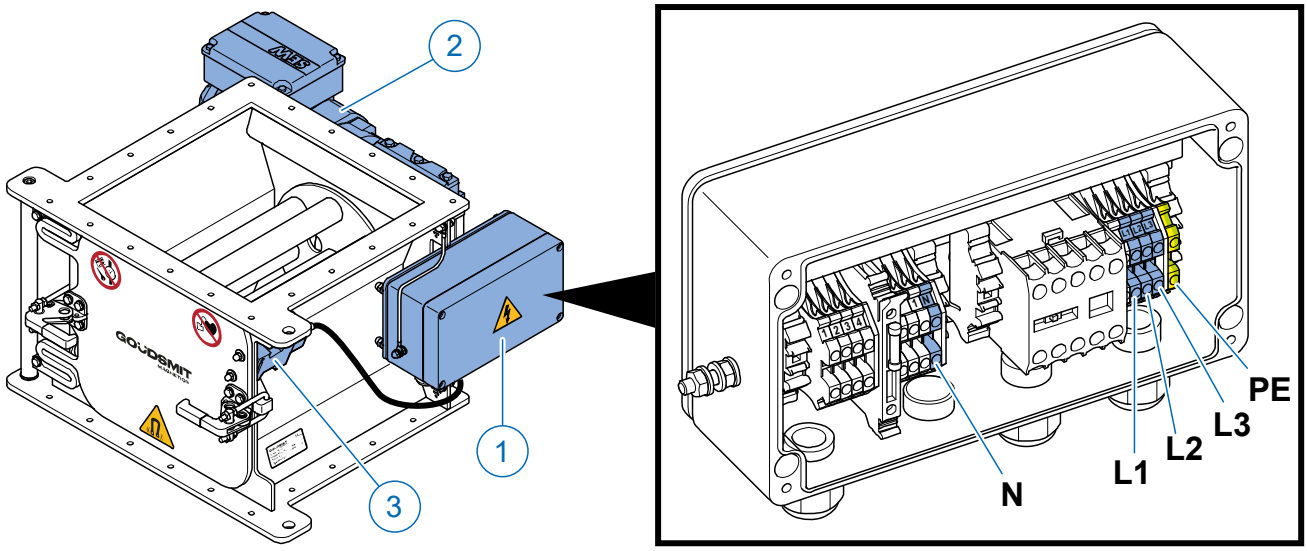
Electrical connection

- Always ensure that the electrical voltage is switched off before starting your work and ensure that it cannot be switched back on without your knowledge.
- Ensure that electrical connections are carried out competently and safely, adhering to national and local electrical standards and regulations.
- The electrical connection values can be found on the type plate and the electrical drawings. Before connecting, check the equipment supplied for the locally applicable connection values and ensure that the connecting cables to be used are calculated for the electrical power to be taken off.
- Ensure that all electrical connections are checked/tightened after delivery and regularly thereafter (e.g. once a year).

Connecting power supply

The device is supplied with a control box [1] as standard. The gearmotor [2] and the door switch [3] are connected to this. The supply voltage of the control box is shown in the supplied wiring diagrams.

► Connect the power cable to terminals **N**, **L1**, **L2**, **L3** and grounding (**PE**) in the control box.



► Check that the electrical installation has been properly realised by performing the following actions, after switching on the power supply:

- Open the door - gearmotor stops turning.
- Close the door - gearmotor starts running again.

Electrical connections & ATEX

If the device is used in an Ex zone, then anything changed or added to the electrical installation must meet the requirements for the applicable dust zone.

Sealing material / grounding

To prevent the generation and build-up of static electricity, provide a metal bridge between the device/product channel and the installation. The completed installation should also be grounded.

Commissioning

During commissioning, observe the safety instructions and other instructions in this manual.

Check before commissioning:

- whether the device / installation has no damage and or defects;
- whether all connections (electrical, mechanical, pneumatic) have been made correctly;
- whether the device is set up properly and is not subject to external vibrations;
- if applicable - whether all protective covers are fitted;
- whether all foreign (iron) objects larger than 10 mm are blocked from entering the production channel;
- whether the device has been thoroughly cleaned internally and externally.
- whether the product does not fall into the magnet system from a height greater than 10 metres.
- or that the entire installation, including the magnet device, is grounded.
- on other potential risks / hazards.

Check during commissioning:

- whether the device / installation has no damage and or defects;
- the motor is running correctly (no overload, no speed variations, strong noise development, etc.);
- in the case of a double-rotor device, the motor is set to the correct direction of rotation;
- whether all parts of the device / installation and any control unit supplied are functioning.

Maintenance and inspection

Clamping/crushing hazard

Because of the very high magnetic forces on the magnetic bars, replacement of magnetic bars and/or magnet packages is extremely dangerous. This replacement may ONLY be carried out by qualified personnel or (preferably) by mechanics of Goudsmit Magnetic Systems. If the replacement is nevertheless carried out by non-qualified personnel, the warranty will be void. Goudsmit Magnetic Systems accepts no liability for any consequential damage to persons and/or materials if this prohibition is not followed.

Caution

- Perform all work on the device while the product flow is stopped.
- Be careful with tools. Even if the power is switched off, the magnetic force is still present.

- ▶ Always inform operating personnel of scheduled inspections, maintenance, repairs or in case of malfunctions.
- ▶ Check regularly that all warning pictograms are in the right place on the device. If the warning pictograms are lost or no longer legible, immediately apply new pictograms in the original place.

Cleaning instructions

The cleaning and disinfection methods and agents used for cleaning must be adapted to the specific type of contamination occurring (carbohydrates, proteins, fats, etc.) and the degree of cleanliness required for your application. Thus, the type of product being processed largely determines which combination of cleaners is appropriate. Consult your cleaning product supplier to select the right cleaning products for your specific situation.

The construction materials are stainless steel 1.4401/SAE 316 and 1.4404/SAE 316L. Check with your cleaning agent supplier whether they are suitable for the material of the chosen seals (Silicone or EPDM).

Wet or dry cleaning

If the use of liquids is not permitted in your facility, use food contact disinfectant wipes if necessary.
The frequency of cleaning depends on the degree of cleanliness required for the processed product.
In applications where sensitive foods are processed, cleaning frequency should be increased. Conduct a hygiene risk assessment to determine the requirements in your case.

Maintenance frequency

Activity	Daily	Month	6 months	Year	2 years
Clean magnetic bars with extractor [1)]	at least 2x				
Measure magnetic bars for flux density [→ page 21].		■			
Visually inspect extractor tubes and magnetic bars for scratches, dents and wear		■			
Clean motor cooling fins (against overheating and explosion hazard) [→ page 25]			■		
Replace door seal and O-ring shaft [→ page 22]				■	
Replace PTFE seals in housing rear panel [→ page 23]					■
Check and replace engine oils [→ page 24]	See section "Motor gearbox"				

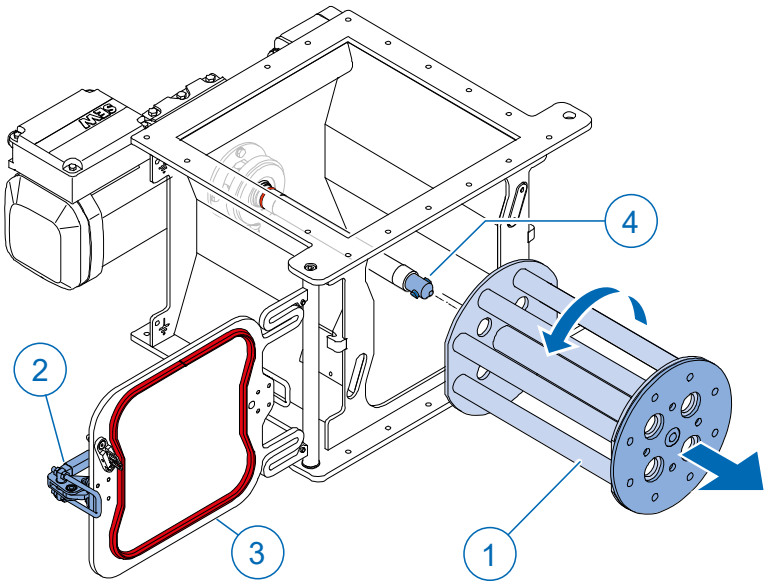
1) *The cleaning frequency depends on the capacity of the product flow and the amount of contamination.*

Goudsmit Magnetic Systems offers an annual Maintenance Inspection including seal replacement and an inspection report with certificate for the magnets.

Cleaning magnet unit (dispose of ferrous parts)

Magnetic systems attract ferromagnetic parts. Regular cleaning is therefore necessary. Clean magnetic bars separate ferromagnetic parts significantly better than contaminated magnetic bars. If a magnetic bar is very saturated, it can lose "trapped" ferrous parts.
These ferrous particles then re-enter the product flow. Also, a saturated magnet can block the flow of the product and the magnet unit, causing the magnet unit and gearmotor to break down.

Removing the magnet unit



- ▶ Stop the product flow. Wait until all the product material has left the product channel.
- ▶ Switch off the gearmotor.
- ▶ Wait until the magnet unit [**1**] has come to a complete stop.
- ▶ Loosen the quick release clamps [**2**] and open the door [**3**].
- ▶ Remove the magnet unit [**1**] from the shaft using a small twist and pull movement from the bayonet fitting [**4**]. When doing so, ensure that the magnetic bars remain in the extractor otherwise ferrous parts may fall back into the product or damage may occur.

Cleaning with the Magnet rotor cleaning unit (accessory)

A special cleaning unit has been developed for these devices.
The Magnet rotor cleaning unit makes it easier to remove the magnet rotor from the extractor (tubes) and clean the extractor.

More information on this accessory can be found on our website:
https://www.goudsmitmagnets.com/en/solutions/accessories/various-accessories?sku=E0102869

Cleaning without cleaning unit

- Place the magnet unit on a solid - non-iron surface - and press into the holes with your thumbs.
- With the remaining fingers, pull the flange to which the magnet rotor is attached.
  The magnet rotor will now detach from the extractor tubes.

Make sure the ferrous particles on the extractor tubes do not "jump" to the magnetic bars because from these they are very difficult to remove.

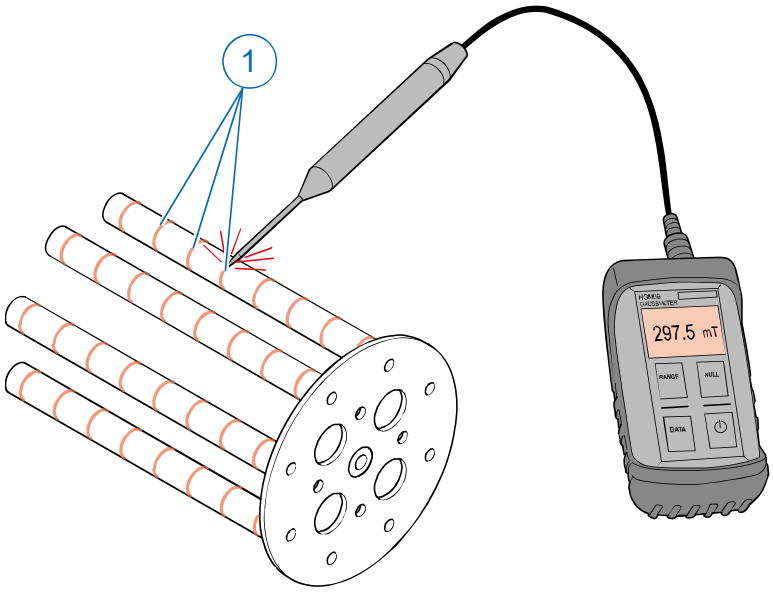
- Pull the magnet rotor completely out of the extractor and place the rotor on a plastic or wooden deposit - far enough separated from the extractor.
- The ferrous particles now fall off the extractor tubes and can be collected and disposed.
- Clean the outside and inside of the extractor tubes thoroughly to prevent entrapment of the magnetic bars in the extractor tubes.
- Clean the magnet rotor with compressed air and/or a soft clean cloth. The magnet rotor can also be cleaned with special cleaning fluids that do not affect the material.
- If you choose to clean with a cleaning solution, make sure you replace the parts completely dry.
- Place the magnet rotor back into the extractor. In doing so, the magnetic bars should be guided slightly towards the holes of the extractor.
- Slide the magnet unit over the shaft in the housing until it is fully seated in the housing. With a slight twist, the magnet unit is secured in the bayonet fitting on the shaft.
- Close the door and fasten the quick release clamps.
- Switch on the gearmotor.
- Production can now be safely restarted.

Flux density measurement of the magnetic bars

The magnetic bars should be measured periodically for magnetic flux density to check whether the magnetic force has decreased. Using a suitable Gaussmeter/teslameter, measure the poles of the magnetic bars on the surface of the magnetic bar tubes (unit is tesla, gauss, kA/m or oersted). Goudsmit performs magnetic measurements on site if required. Proceed as follows for a flux density measurement:

- ▶ Stop the product flow. Wait until all the product material has left the product channel.
- ▶ Switch off the gearmotor.
- ▶ Wait for the magnet unit to come to a complete stop.
- ▶ Release the quick release clamp and open the door.
- ▶ Remove the magnet unit from the bayonet lock from the shaft with a small twist and pull.
- ▶ Place the magnet unit on a solid - not ferrous - surface.
- ▶ Then pull the magnet rotor out of the extractor and remove the captured Fe particles.
- ▶ Clean the extractor tubes and magnet rotor with a soft, clean cloth and - if necessary - with a suitable cleaning fluid. The inside of the extractor tubes should also be kept clean to prevent the extractor from clamping around the magnetic bars.
- ▶ Move the Gaussmeter/teslameter along the poles [**1**] of the magnetic bars. Record the highest value measured.

  The measured values can fluctuate due to several factors, including the position (angle) of the probe on the magnetic bar tube, the thickness of the probe and the reproducibility of the measurement.

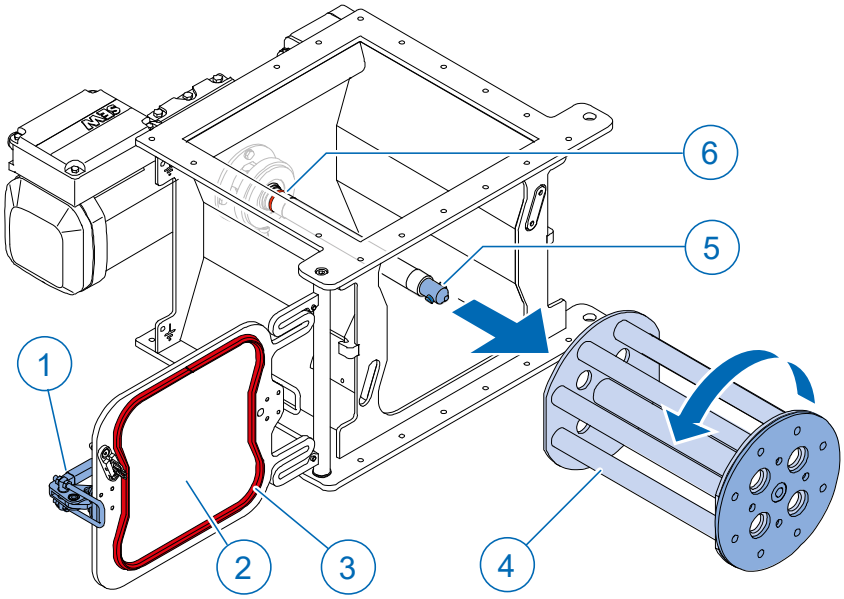


- ▶ Using the corresponding data sheet, check whether the measured values are within the allowed values of the peak value.
- ▶ Put all parts back together in reverse order.
- ▶ Production can now be safely restarted.

Replacing seals

Replace door seal and O-ring shaft

We recommend replacing the door seal and O-ring at least every year or more often, depending on wear and tear. Proceed as follows to replace the seals:



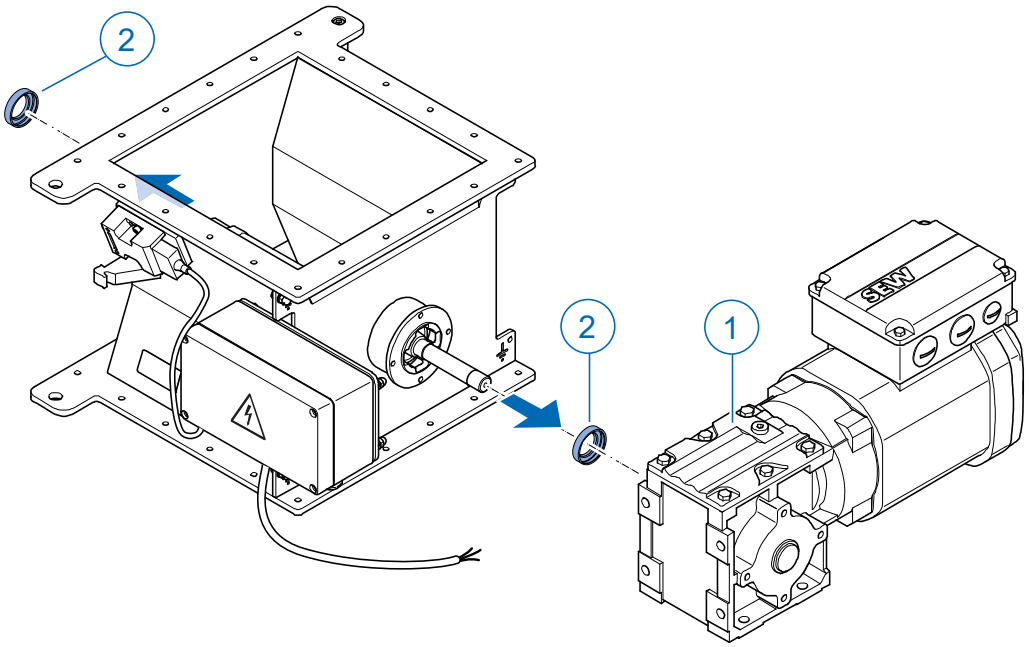
- Stop the product flow. Wait until all the product material has left the product channel.
- Switch off the gearmotor. Wait for the magnet unit to come to a complete stop.
- Loosen the quick release clamps [**1**] and open the door [**2**].
- Remove the old door seal [**3**].
- Clean thoroughly the groove in the door.
- Fit the new door seal into the groove.
- Remove the magnet unit [**4**] from the bayonet fitting [**5**] from the shaft with a small twist and pull movement and place the unit on a clean - non-ferrous - surface.
- Remove the O-ring [**6**] from the shaft and clean thoroughly the groove with the shaft.
- Fit a new O-ring.
- Place the magnet unit back on the shaft and secure it with the bayonet lock.
- Close the door.
- Secure the door with the quick release clamps.
- Switch on the gearmotor.
- Production can now be safely restarted.

If necessary, the door can be dismantled to replace the door seal. Then lay it on a clean, flat surface.

If the seals wear out quickly, e.g. due to too high temperature or too abrasive product, enquire about alternative seals.

Replacing PTFE seals

We recommend replacing both PTFE seals at least every 2 years or more often, depending on wear. Proceed as follows:



- Stop the product flow. Wait until all the product material has left the product channel.
- Stop the gearmotor and de-energise it.
- Release the quick release clamps and open the door.
- Remove the magnet unit from the bayonet lock from the shaft with a small twist and pull movement and place it on a clean - not ferrous - surface.
- Dismantle the gearmotor [**1**].
- Remove both PTFE seals [**2**]. One PTFE seal is accessible from the inside of the device and the other from the outside. If necessary, use an auxiliary tool, available from Goudsmit Magnetic Systems.
- Clean the slide bearing internally and externally with a soft clean cloth.
- Fit the new PTFE seals. If necessary, use the "SECR-S-TOOL PTFE Seal" auxiliary tool developed by Goudsmit Magnetic Systems (E0125121).
- Reinstall everything in reverse order.
- Return power to the gearmotor.
- Production can now be safely restarted.

Gearmotor

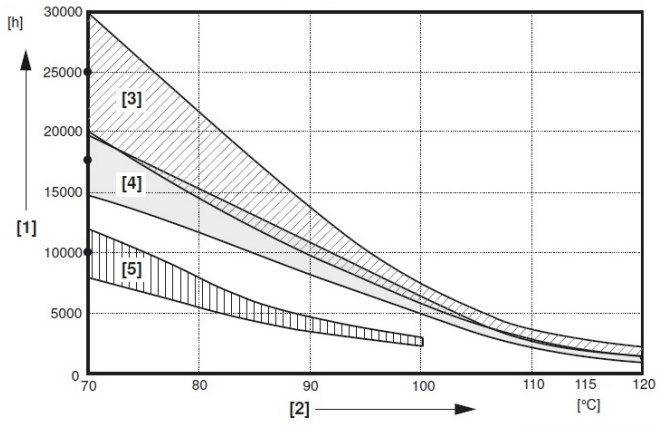
Danger of burns

Switch off the motor and disconnect the power supply to the device to prevent it from being accidentally switched on again. Wait for the motor to cool down.

- ▶ Check regularly if the motor makes more noise than usual or if it is warmer than usual. If this is the case, find out what is causing it and fix the problem as soon as possible to avoid (further) damage.

The table below shows general indications of inspection and maintenance intervals under normal ambient conditions of the motor manufacturer.

Gearbox	
Frequency	**What to do?**
Every 3,000 operating hours, at least every 6 months.	• Check oil and oil level. • Check the running sound for possible bearing damage. • Visually check the seals for leaks. • For gearboxes with torque arm: Check and replace rubber buffers, if necessary.
Depending on operating conditions (see chart below), at least every 3 years. Depending on oil temperature.	• Change the mineral oil (see gearmotor data sheet for oil type and quantity).
Depending on operating conditions (see chart below), at least every 5 years. Depending on oil temperature.	• Change the synthetic oil (see gearmotor data sheet for oil type and quantity).
Varied (depending on external factors).	• Touch-up or renew surface/anti-rust coating. Check with the motor manufacturer for more information on the coating.
Motor	
Frequency	**What to do?**
Every 10,000 operating hours, at least every 6 months.	Inspect the motor: • Check all bearings and replace if necessary. • Clean the air cooling vents.



[1] Operating hours
[2] Constant oil bath temperature. Average value per oil type at 70 °C.
[3] **CLP PG**.
[4] **CLP HC / HCE** Food-grade lubricant for the food industry.
[5] **CLP HLP / E** Lubricants based on biodegradable oils for agriculture, forestry and water boards

When changing the oil, use **SEW GearOil Poly 460 H1 E1**, for example, which is suitable for occasional food contact. **Please note!** SEW GearOil Poly 460 H1 cannot be mixed with other mineral or synthetic oils.

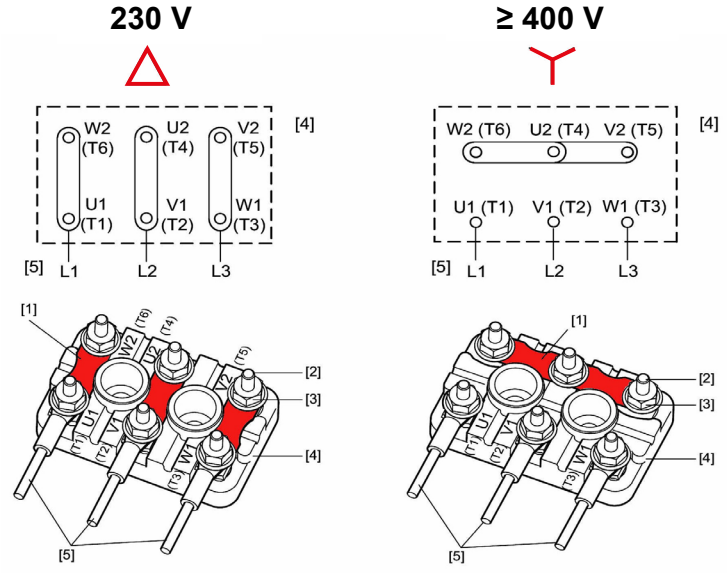
Bearings

The gearboxes are equipped with maintenance-free bearings and run in an oil-lubricated bath.
For more information, visit the motor manufacturer's website (see data sheet).

Motor replacement

The electrical connection values of the motor are given on the type plate of the motor.

- Check the correct direction of rotation of the motor. This can be done by switching on the motor briefly.
  If the direction of rotation is not correct, swap 2 of the 3 phases (U, V, W).
  It does not matter here whether you have a Δ or a Y circuit.



- Do not forget to attach the ground wire.

Cleaning instructions

For cleaning the inside of the product channel, the customer must make a provision to allow access to the inside of the product channel.

The cleaning and disinfection methods and agents used for cleaning must be adapted to the specific type of contamination occurring (carbohydrates, proteins, fats, etc.) and the degree of cleanliness required for your application. Thus, the type of product being processed largely determines which combination of cleaning agents are suitable. Consult your cleaning product supplier to select the right cleaning products for your specific situation.

The construction materials are stainless steel 1.4301/SAE 304L and 1.4404/SAE 316L. Check with your supplier of cleaning agents that they are suitable for the material of the chosen seals (Silicone, NBR or VITON).

Wet or dry cleaning

If the use of liquids is not permitted in your facility, use food contact disinfectant wipes if necessary.

The frequency of cleaning depends on the degree of cleanliness required for the processed product.
In applications where sensitive food products are processed, the cleaning frequency should be increased.
Conduct a hygiene risk assessment to determine the requirements in your case.

Cleaning & ATEX

Avoid dust accumulations, thus avoiding unnecessary ignition risk resulting from heating of the dust layer. If dust layers heat up, they may fuse and then ignite, igniting a passing dust cloud into an explosion, or become a self-igniting dust cloud. So clean sufficiently often to prevent dust accumulations.

Malfunctions / Troubleshooting

Use the table below to look up malfunctions, determine the possible cause and find the remedy. In case of a malfunction, which is not listed in the table, contact Goudsmit Magnetic Systems customer service.

Malfunction	Possible cause	Remedy
Magnet does not separate ferromagnetic particles from the product stream, or does so poorly.	Magnet is saturated with ferromagnetic particles.	Clean the magnet of trapped particles.
		Use a permanent magnet to check that the particles to be separated are ferromagnetic.
	Unattached parts are not ferromagnetic enough.	Check the magnetic behaviour of the installed parts near the magnets by holding an iron part near the magnets. If any parts react to the magnet, replace them with non-magnetic parts, such as those made of stainless steel.
	Ferromagnetic parts in the vicinity of the magnet reduce the ferro separation capacity.	
Motor makes too much noise / has higher than normal current [A].	Magnet is saturated with ferromagnetic particles.	Clean the magnet of trapped particles.
	There is an object between the rotor and the device housing.	Remove the object and clean the extractor.
	The dust seals or bearing ring between casing and rotor give higher resistance due to wear or breakage.	Replace the dust seal(s) or bearing ring.
Magnet unit not rotating.	Electrical connection not in order.	Check and repair the electrical connection.
	Motor not running.	Repair or replace motor.
	The dust seals or bearing ring between housing and rotor give higher resistance due to wear or breakage.	Replace the dust seal(s) and/or bearing ring.
Magnet rotor is difficult or impossible to move out of the extractor.	Dent(s) in 1 or more extractor tubes.	Remove the dents or order a new extractor or complete magnet unit.
If a second control box is included in the delivery.	Start button on control box is not pressed.	Press the (green) start button.
	Thermal protection has been triggered.	Find the cause and fix the problem. Reset the thermal protection.
If a door closer with safety lock is included in the delivery.	The safety lock housing has not been activated.	Make sure the safety catch makes proper contact with the safety catch housing.
	The door is not closed properly.	Close the door by pressing the safety catch and locking the closing mechanism.

Service, storage and dismantling

Customer service

Please have the following information at hand when contacting the customer service:

- All data from the type plate.
- Type and extent of the problem.
- Time of failure and additional circumstances.
- Assumed cause.

Spare parts

The quality of Goudsmit Magnetic Systems' products ensures a high operational reliability. However, if a certain part does need replacement, you can order a new one, quoting the article number and order number on the type plate or on the enclosed drawing(s) and data sheet.

Spare parts are usually parts subject to wear and tear, including:

- O-ring(s)
- gasket(s)
- magnetic bars
- magnet rotor
- extractor
- motor.

Depending on your (abrasive) product and the capacity of your product flow, seals will wear accordingly. Several types of seals are available for this device. See the data sheet for exact specifications. Please contact us for availability of seal rings.

When replacing magnetic bars, it is recommended to replace the (complete) magnet rotor.
When ordering, please quote the article and order number located on the type plate.
For more information, contact us at +31 (0)40 22 13 283.

Storage and disposal

Storage

If the appliance will not be used for an extended period, we recommend placing it in a dry, safe place and, if necessary, preserving the vulnerable parts.

Disposal

When dismantling or scrapping the device, take into account the materials that make up the various components (magnets, iron, aluminium, insulation material, electrical materials, etc.) Preferably have this done by a specialised company and always pay attention to the local rules and standards on disposal of industrial waste. Inform the specialised company about the dangers of magnetism if the device contains permanent magnets.